

MICROMECHANICAL ROTATION RATE SENSOR AND METHOD FOR PRODUCING THE SAME

ABSTRACT

In a method for producing a micromechanical rotation rate sensor, a wafer stack arrangement is used wherein a substrate wafer arrangement (12, 16) is connected to a structural wafer arrangement (14, 18) by means of an insulating connecting layer (15). The required thickness of the structural wafer arrangement (14, 18) is adjusted by thinning it out, whereupon the structural wafer arrangement is structured so as to define at least one seismic mass (20), a suspension (24) and a spring means (22a, 22b) which connects the seismic mass to the suspension. The connecting layer acts as an etch stop for a dry-etching method in which the structural wafer arrangement is structured. In a subsequent further dry-etching step, the connecting layer is selectively removed in such a way that the seismic mass can carry out an excitation oscillation and the seismic mass or parts thereof can carry out a detection oscillation on the basis of a Coriolis force relative to the substrate wafer arrangement. The wafer stack arrangement makes it possible to integrate e.g. a monolithic circuit in the substrate wafer before the wafers are connected, and to apply a metallization to the substrate wafer which, too, can be structured before the wafers are connected, so as to form e.g. detection electrodes for a capacitive detection method.

On the 20th of June, 1852, the author of this paper, with his wife and two sons, left New York for the West, and on the 25th of July, 1853, reached the city of San Francisco.